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**INFORMATION
TECHNOLOGY**

**VA and DOD Are Making
Progress in Sharing
Medical Information, but
Are Far from
Comprehensive Electronic
Medical Records**

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Issues



G A O

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Highlights of [GAO-07-852T](#), a report to Subcommittee on Oversight and Investigations, Committee on Veterans' Affairs, House of Representatives

Why GAO Did This Study

The Department of Veterans Affairs (VA) and the Department of Defense (DOD) are engaged in ongoing efforts to share medical information, which is important in helping to ensure high-quality health care for active-duty military personnel and veterans. These efforts include a long-term program to develop modernized health information systems based on computable data: that is, data in a format that a computer application can act on—for example, to provide alerts to clinicians of drug allergies. In addition, the departments are engaged in near-term initiatives involving existing systems.

GAO was asked to testify on the history and current status of these long- and near-term efforts to share health information.

To develop this testimony, GAO reviewed its previous work, analyzed documents, and interviewed VA and DOD officials about current status and future plans.

What GAO Recommends

GAO has previously made several recommendations on these topics, including that VA and DOD develop a detailed project management plan to guide their efforts to share patient health data. The departments agreed with these recommendations.

www.gao.gov/cgi-bin/getrpt?GAO-07-852T.

To view the full product, including the scope and methodology, click on the link above. For more information, contact Valerie Melvin at (202) 512-6304 or melvinv@gao.gov.

INFORMATION TECHNOLOGY

VA and DOD Are Making Progress in Sharing Medical Information, but Are Far from Comprehensive Electronic Medical Records

What GAO Found

For almost a decade, VA and DOD have been pursuing ways to share health information and create comprehensive electronic medical records. However, they have faced considerable challenges in these efforts, leading to repeated changes in the focus of their initiatives and target dates. Currently, the two departments are pursuing both long- and short-term initiatives to share health information. Under their long-term initiative, the modern health information systems being developed by each department are to share standardized computable data through an interface between data repositories associated with each system. The repositories have now been developed, and the departments have begun to populate them with limited types of health information. In addition, the interface between the repositories has been implemented at seven VA and DOD sites, allowing computable outpatient pharmacy and drug allergy data to be exchanged. Implementing this interface is a milestone toward the departments' long-term goal, but more remains to be done. Besides extending the current capability throughout VA and DOD, the departments must still agree to standards for the remaining categories of medical information, populate the data repositories with this information, complete the development of the two modernized health information systems, and transition from their existing systems.

While pursuing their long-term effort to develop modernized systems, the two departments have also been working to share information in their existing systems. Among various near-term initiatives are a completed effort to allow the one-way transfer of health information from DOD to VA when service members leave the military, as well as ongoing demonstration projects to exchange limited data at selected sites. One of these projects, building on the one-way transfer capability, developed an interface between certain existing systems that allows a two-way view of current data on patients receiving care from both departments. VA and DOD are now working to link other systems via this interface and extend its capabilities. The departments have also established ad hoc processes to meet the immediate need to provide data on severely wounded service members to VA's polytrauma centers, which specialize in treating such patients. These processes include manual workarounds (such as scanning paper records) that are generally feasible only because the number of polytrauma patients is small. These multiple initiatives and ad hoc processes highlight the need for continued efforts to integrate information systems and automate information exchange. In addition, it is not clear how all the initiatives are to be incorporated into an overall strategy focused on achieving the departments' goal of comprehensive, seamless exchange of health information.

Mr. Chairman and Members of the Subcommittee:

I am pleased to participate in today's hearing on sharing electronic medical records between the Department of Defense (DOD) and the Department of Veterans Affairs (VA). For almost 10 years, the departments have been engaged in multiple efforts to share electronic medical information, which is important in helping to ensure that active-duty military personnel and veterans receive high-quality health care. These include efforts focused on the long-term vision of a single "comprehensive, lifelong medical record for each service member"¹ that would allow a seamless transition between the two departments, as well as more near-term efforts to meet immediate needs to exchange health information, including responding to current military crises.

Each department is developing its own modern health information system to replace its existing ("legacy") systems, and they are collaborating on a program to develop an interface to enable these modernized systems to share data and ultimately to have interoperable² electronic medical records. Unlike the legacy systems, the modernized systems are to be based on computable data: that is, the data are to be in a format that a computer application can act on, for example, to provide alerts to clinicians (of such things as drug allergies) or to plot graphs of changes in vital signs such as blood pressure. According to the departments, such computable data contribute significantly to patient safety and the usefulness of electronic medical records.

While working on this long-term effort, the two departments have also been pursuing various near-term initiatives to exchange electronic medical information in their existing systems. These

¹ In 1996, the Presidential Advisory Committee on Gulf War Veterans' Illnesses reported on many deficiencies in VA's and DOD's data capabilities for handling service members' health information. In November 1997, the President called for the two agencies to start developing a "comprehensive, lifelong medical record for each service member," and in 1998 issued a directive requiring VA and DOD to develop a "computer-based patient record system that will accurately and efficiently exchange information."

² Interoperability is the ability of two or more systems or components to exchange information and to use the information that has been exchanged.

include a completed effort to allow the one-way transfer of health information from DOD to VA when service members leave the military, ongoing demonstration projects to exchange particular types of data at selected sites, and efforts to meet the immediate needs of facilities treating veterans and service members with multiple injuries.

As you requested, my testimony will summarize the history of the two departments' efforts to develop the capability to share health information, and provide an overview of the current status of the long- and near-term efforts that the departments are making to share health information.

The information in my testimony is based largely on our previous work in this area. To describe the current status of VA and DOD efforts to exchange patient health information, we reviewed our previous work, analyzed documents on various health initiatives, and interviewed VA and DOD officials about current status and future plans. The costs that have been incurred for the various projects were provided by cognizant VA and DOD officials. We did not audit the reported costs and thus cannot attest to their accuracy or completeness. All work on which this testimony is based was conducted in accordance with generally accepted government auditing standards.

Results in Brief

VA and DOD have been pursuing ways to share data in their health information systems and create comprehensive electronic medical records since 1998, following the call for the development of a comprehensive integrated system to allow the two departments to share patient health information. However, the departments have faced considerable challenges, leading to repeated changes in the focus of their initiatives and target dates. In reviewing the departments' initial project, we noted disappointing progress, exacerbated by inadequate accountability and poor planning and oversight, which raised doubts about the departments' ability to achieve a comprehensive electronic medical record. We made

recommendations aimed at enhancing management and accountability by, among other things, the creation of comprehensive and coordinated plans that included an agreed-upon mission and clear goals, objectives, and performance measures. In response, the departments refocused the project and divided it into long- and short-term initiatives. The long-term initiative, still ongoing, is to develop a common health information architecture that would allow the two-way exchange of health information through the development of modern health information systems. The short-term initiative (the Federal Health Information Exchange) was to enable DOD to electronically transfer to VA health information on service members when they leave the military; this initiative was completed in 2004. Other short-term initiatives were subsequently established that were similarly focused on sharing information in existing systems, an important requirement until the departments' modern health information systems are completed. In particular, two demonstration projects were established in 2004 in response to congressional mandate, one of which led the two departments to develop an interim strategy to connect existing systems and allow information sharing among them. Finally, the two departments announced in January 2007 a further new strategy: their intention to jointly develop a new inpatient medical record system. The departments have indicated that by adopting a joint solution, they could realize significant cost savings and make inpatient health care data immediately accessible to both departments.

VA and DOD have made progress in both their long-term and short-term initiatives to share health information, but much work remains to achieve the goal of a shared electronic medical record and seamless transition between the two departments. In the long-term project to develop modernized health information systems, the departments have begun to implement the first release of the interface between their modernized data repositories, and computable outpatient pharmacy and drug allergy data are being exchanged at seven VA and DOD sites. Although the data being exchanged are limited, implementing this interface is a milestone toward the long-term goal of modernized systems with interoperable electronic medical records. In the meantime, the two departments have also made progress in their short-term projects to share

information in existing systems. Besides completing the Federal Health Information Exchange, the departments have made progress on two demonstration projects:

- The Laboratory Data Sharing Interface, which allows DOD and VA facilities serving the same geographic area to share laboratory resources, is deployed at 9 localities to communicate orders for lab test and their results electronically and can be deployed at others if the need is demonstrated.
- The Bidirectional Health Information Exchange, which allows a real-time, two-way view of health data from existing systems,³ provides this capability (for outpatient data) to all VA sites and 25 DOD sites and (for certain inpatient discharge summary data)⁴ to all VA sites and 5 DOD sites. Expanding this interface is the foundation of the departments' interim strategy to share information among their existing systems.

In addition to their technology efforts, the two departments have undertaken ad hoc activities to accelerate the transmission of health information on severely wounded patients from DOD to VA's four polytrauma centers, which care for veterans and service members with disabling injuries to more than one physical region or organ system. These ad hoc processes include manual workarounds such as scanning paper records and individually transmitting radiological images. Such processes are generally feasible only because the number of polytrauma patients is small (about 350 in all to date).

Through all these efforts, VA and DOD are achieving exchanges of health information. However, these exchanges are as yet limited, and it is not clear how they are to be integrated into an overall strategy toward achieving the departments' long-term goal of comprehensive, seamless exchange of health information. To achieve this goal, significant work remains to be done, including agreeing to standards for the remaining categories of medical

³ DOD's Composite Health Care System (CHCS) and VA's VistA (Veterans Health Information Systems and Technology Architecture).

⁴ Specifically, inpatient discharge summary data stored in VA's VistA and DOD's Clinical Information System (CIS), a commercial health information system customized for DOD.

information, populating the data repositories with all this information, completing the development of their modernized systems, and transitioning from the legacy systems. Consequently, it is essential for the departments to develop a comprehensive project plan to guide this effort to completion, in line with our earlier recommendations.

Background

In their efforts to modernize their health information systems and share medical information, VA and DOD begin from different positions. As shown in table 1, VA has one integrated medical information system, VistA (Veterans Health Information Systems and Technology Architecture), which uses all electronic records. All 128 VA medical sites thus have access to all VistA information.⁵ (Table 1 also shows, for completeness, VA’s planned modernized system and its associated data repository.)

Table 1: VA Medical Information Systems

System name	Description
<i>Legacy systems</i>	
VistA Veterans Health Information Systems and Technology Architecture	Existing integrated health information system.
<i>Modernized system and repository</i>	
HealtheVet VistA	Modernized health information system based on computable data.
HDR Health Data Repository	Data repository associated with modernized system.

Source: GAO analysis of VA data.

In contrast, DOD has multiple medical information systems (see table 2). DOD’s various systems are not integrated, and its 138 sites do not necessarily communicate with each other. In addition, not all of DOD’s medical information is electronic: some records are paper-based.

⁵ A site represents one or more facilities—medical centers, hospitals, or outpatient clinics—that store their electronic health data in a single database.

Table 2: Selected DOD Medical Information Systems

System name	Description
<i>Legacy systems</i>	
CHCS Composite Health Care System	Primary existing DOD health information system.
CIS Clinical Information System	Commercial health information system customized for DOD; used by some DOD facilities for inpatients.
ICDB Integrated Clinical Database	Health information system used by many Air Force facilities.
TMDS Theater Medical Data Store	Database to collect electronic medical information in combat theater for both outpatient care and serious injuries.
JPTA Joint Patient Tracking Application	Web-based application primarily used to track the movement of patients as they are transferred from location to location, but may include text-based medical information.
<i>Modernized system and repository</i>	
AHLTA Armed Forces Health Longitudinal Technology Application ^a	Modernized health information system, integrated and based on computable data.
CDR Clinical Data Repository	Data repository associated with modernized system.

Source: GAO analysis of DOD data.

^a Formerly CHCS II.

VA and DOD Have Been Working to Exchange Health Information Since 1998

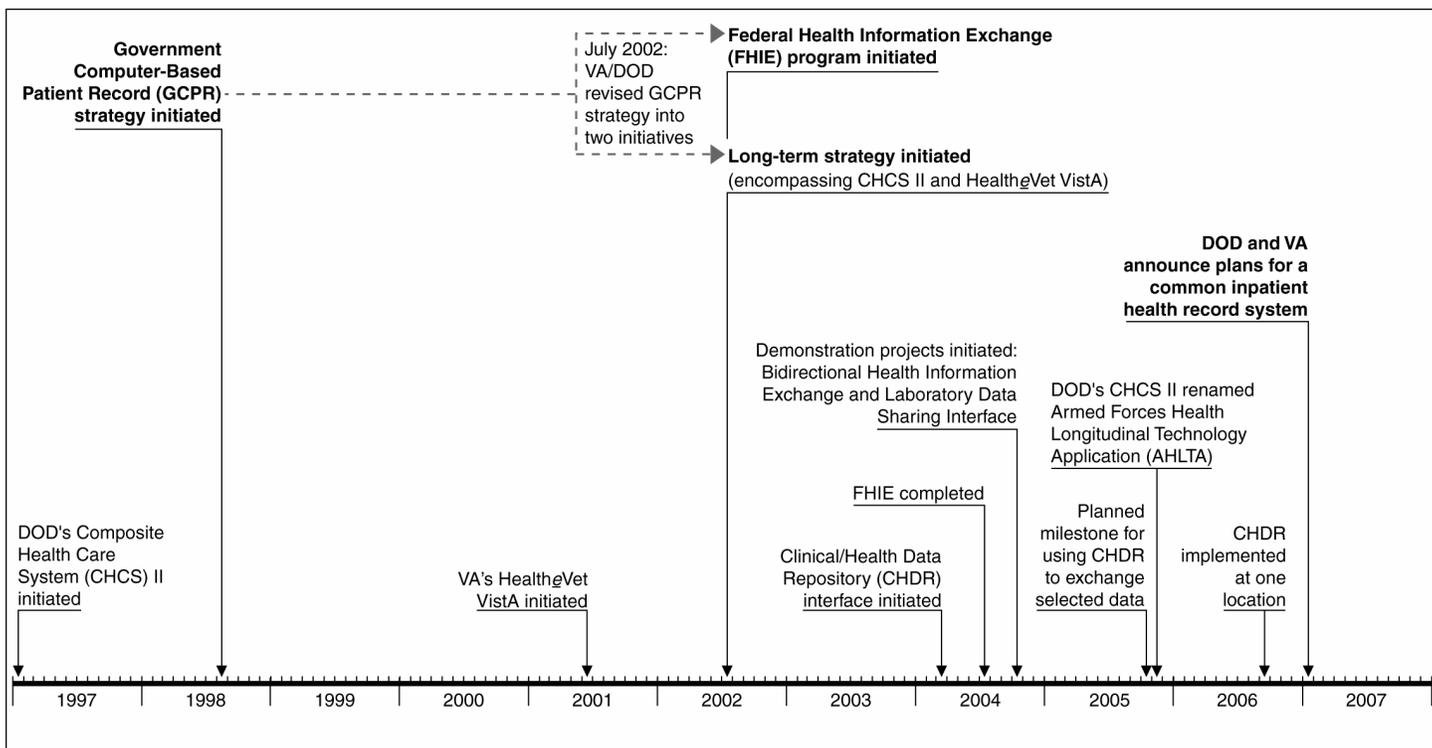
For almost a decade, VA and DOD have been pursuing ways to share data in their health information systems and create comprehensive electronic records.⁶ However, the departments have faced considerable challenges, leading to repeated changes in the focus of their initiatives and target dates for accomplishment.

As shown in figure 1, the departments' efforts have involved a number of distinct initiatives, both long-term initiatives to develop future modernized solutions, and short-term initiatives to respond to

⁶ Initially, the Indian Health Service (IHS) was also a party to this effort, having been included because of its population-based research expertise and its long-standing relationship with VA. However, IHS was not included in a later revised strategy for electronically sharing patient health information.

more immediate needs to share information in existing systems. As the figure shows, these initiatives often proceeded in parallel.

Figure 1: Timeline of Selected VA/DOD Electronic Medical Records and Data Sharing Efforts



Source: GAO analysis of VA and DOD data.

The departments' first initiative, known as the Government Computer-Based Patient Record (GCPR) project, aimed to develop an electronic interface that would let physicians and other authorized users at VA and DOD health facilities access data from each other's health information systems. The interface was expected to compile requested patient information in a virtual record (that is, electronic as opposed to paper) that could be displayed on a user's computer screen.

In 2001 and 2002, we reviewed the GCPR project and noted disappointing progress, exacerbated in large part by inadequate accountability and poor planning and oversight, which raised doubts about the departments' ability to achieve a virtual medical record.

We determined that the lack of a lead entity, clear mission, and detailed planning to achieve that mission made it difficult to monitor progress, identify project risks, and develop appropriate contingency plans.⁷ We made recommendations in both years that the departments enhance the project's overall management and accountability. In particular, we recommended that the departments designate a lead entity and a clear line of authority for the project; create comprehensive and coordinated plans that include an agreed-upon mission and clear goals, objectives, and performance measures; revise the project's original goals and objectives to align with the current strategy; commit the executive support necessary to adequately manage the project; and ensure that it followed sound project management principles.

In response, the two departments revised their strategy in July 2002, refocusing the project and dividing it into two initiatives. A short-term initiative (the Federal Health Information Exchange or FHIE) was to enable DOD, when service members left the military, to electronically transfer their health information to VA. VA was designated as the lead entity for implementing FHIE, which was successfully completed in 2004. A longer term initiative was to develop a common health information architecture that would allow the two-way exchange of health information. The common architecture is to include standardized, computable data, communications, security, and high-performance health information systems (these systems, DOD's CHCS II and VA's Health_eVet VistA, were already in development, as shown in the figure).⁸ The departments' modernized systems are to store information (in standardized, computable form) in separate data repositories: DOD's Clinical Data Repository (CDR) and VA's Health Data

⁷ GAO, *Veterans Affairs: Sustained Management Attention Is Key to Achieving Information Technology Results*, GAO-02-703 (Washington, D.C.: June 12, 2002) and *Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing*, GAO-01-459 (Washington, D.C.: Apr. 30, 2001).

⁸ DOD's existing Composite Health Care System (CHCS) was being modernized as CHCS II, now renamed AHLTA (Armed Forces Health Longitudinal Technology Application). VA's existing VistA system was being modernized as Health_eVet VistA.

Repository (HDR). The two repositories are to exchange information through an interface named CHDR.⁹

In March 2004, the departments began to develop the CHDR interface, and they planned to begin implementation by October 2005.¹⁰ However, implementation of the first release of the interface (at one site) occurred in September 2006, almost a year later. In a review in June 2004, we identified a number of management weaknesses that could have contributed to this delay¹¹ and made a number of recommendations, including creation of a comprehensive and coordinated project management plan. In response, the departments agreed to our recommendations and improved the management of the CHDR program by designating a lead entity with final decision-making authority and establishing a project management structure. As we noted in later testimony, however, the program did not develop a project management plan that would give a detailed description of the technical and managerial processes necessary to satisfy project requirements (including a work breakdown structure and schedule for all development, testing, and implementation tasks), as we had recommended.¹²

In October 2004, the two departments established two more short-term initiatives in response to a congressional mandate.¹³ These were two demonstration projects: the Laboratory Data Sharing Interface, aimed at allowing VA and DOD facilities to share

⁹ The name CHDR, pronounced “cheddar,” combines the names of the two repositories.

¹⁰ December 2004 VA and DOD Joint Strategic Plan.

¹¹ GAO, *Computer-Based Patient Records: VA and DOD Efforts to Exchange Health Data Could Benefit from Improved Planning and Project Management*, [GAO-04-687](#) (Washington, D.C.: June 7, 2004).

¹² GAO, *Computer-Based Patient Records: VA and DOD Made Progress, but Much Work Remains to Fully Share Medical Information*, [GAO-05-1051T](#) (Washington, D.C.: Sept. 28, 2005) and *Information Technology: VA and DOD Face Challenges in Completing Key Efforts*, [GAO-06-905T](#) (Washington, D.C.: June 22, 2006).

¹³ The Bob Stump National Defense Authorization Act for Fiscal Year 2003 (Pub. L. 107-314, 2002) mandated that the departments conduct demonstration projects to test the feasibility, advantages, and disadvantages of measures and programs designed to improve the sharing and coordination of health care and health care resources between the departments.

laboratory resources, and the Bidirectional Health Information Exchange (BHIE), aimed at allowing both departments' clinicians access to records on shared patients (that is, those who receive care from both departments).¹⁴ As demonstration projects, both initiatives were limited in scope, with the intention of providing interim solutions to the departments' need for more immediate health information sharing. However, because BHIE provided access to up-to-date information, the departments' clinicians expressed strong interest in increasing its use. As a result, the departments began planning to broaden BHIE's capabilities and expand its implementation considerably. Until the departments' modernized systems are fully developed and implemented, extending BHIE connectivity could provide each department with access to most data in the other's legacy systems. According to a VA/DOD annual report¹⁵ and program officials, the departments now consider BHIE an interim step in their overall strategy to create a two-way exchange of electronic medical records.

Most recently, the departments have announced a further change to their information-sharing strategy. In January 2007, they announced their intention to jointly develop a new inpatient medical record system. According to the departments, adopting this joint solution will facilitate the seamless transition of active-duty service members to veteran status, as well as making inpatient healthcare data on shared patients immediately accessible to both DOD and VA. In addition, the departments consider that a joint development effort could allow them to realize significant cost savings. We have not evaluated the departments' plans or strategy in this area.

¹⁴ To create BHIE, the departments drew on the architecture and framework of the information transfer system established by the FHIE project. Unlike FHIE, which provides a one-way transfer of information to VA when a service member separates from the military, the two-way system allows clinicians in both departments to view, in real time, limited health data (in text form) from the departments' current health information systems.

¹⁵ December 2004 VA and DOD Joint Strategic Plan.

Others Have Recommended Strengthening the Management and Planning of the Departments' Health Information Initiatives

Throughout the history of these initiatives, evaluations beyond ours have also found deficiencies in the departments' efforts, especially with regard to the need for comprehensive planning. For example, in fiscal year 2006, the Congress did not provide all the funding requested for Health_eVet VistA because it did not consider that the funding had been adequately justified. In addition, a recent presidential task force identified the need for VA and DOD to improve their long-term planning.¹⁶ This task force, reporting on gaps in services provided to returning veterans, noted problems with regard to sharing information on wounded service members, including the inability of VA providers to access paper DOD inpatient health records. According to the report, although significant progress has been made on sharing electronic information, more needs to be done. The task force recommended that VA and DOD continue to identify long-term initiatives and define scope and elements of a joint inpatient electronic health record.

VA and DOD Are Exchanging Limited Medical Information, but Much Work Remains to Achieve Seamless Sharing

VA and DOD have made progress in both their long-term and short-term initiatives to share health information. In the long-term project to develop modernized health information systems, the departments have begun to implement the first release of the interface between their modernized data repositories, among other things. The two departments have also made progress in their short-term projects to share information in existing systems, having completed two initiatives and making important progress on another. In addition, the two departments have undertaken ad hoc activities to accelerate the transmission of health information on severely wounded

¹⁶ Task Force on Returning Global War on Terror Heroes, *Report to the President* (Apr. 19, 2007).

patients from DOD to VA's four polytrauma centers. However, despite the progress made and the sharing achieved, the tasks remaining to achieve the goal of a shared electronic medical record remain substantial.

VA and DOD Have Begun Deployment of a Modernized Data Interface

In their long-term effort to share health information, VA and DOD have completed the development of their modernized data repositories, agreed on standards for various types of data, and begun to populate the repositories with these data.¹⁷ In addition, they have now implemented the first release of the CHDR interface, which links the two departments' repositories, at seven sites. The first release has enabled the seven sites to share limited medical information: specifically, computable outpatient pharmacy and drug allergy information for shared patients.

According to DOD officials, in the third quarter of 2007 the department will send out instructions to its remaining sites so that they can all begin using CHDR. According to VA officials, the interface will be available across the department when necessary software updates are released, which is expected this July.¹⁸

Besides being a milestone in the development of the departments' modernized systems, the interface implementation provides benefits to the departments' current systems. Data transmitted by CHDR are permanently stored in the modernized data repositories, CDR and HDR. Once in the repositories, these computable data can be used by DOD and VA at all sites through their existing systems. CHDR also provides terminology mediation (translation of one agency's terminology into the other's). VA and DOD plans call for developing the capability to exchange computable laboratory results data through CHDR during fiscal year 2008.

¹⁷ DOD has populated CDR with information for outpatient encounters, drug allergies, and order entries and results for outpatient pharmacy/lab orders. VA has populated HDR with patient demographics, vital signs records, allergy data, and outpatient pharmacy data; this summer, the department plans to include chemistry and hematology laboratory data.

¹⁸ The Remote Data Interoperability software upgrade provides the capability for the automated checks and alerts allowed by computable data.

Although implementing this interface is an important accomplishment, the departments are still a long way from completion of the modernized health information systems and comprehensive longitudinal health records. While DOD and VA had originally projected completion dates for their modernized systems of 2011 and 2012, respectively, department officials told us that there is currently no scheduled completion date for either system. Further, both departments have still to identify the next types of data to be stored in the repositories. The two departments will then have to populate the repositories with the standardized data, which involves different tasks for each department. Specifically, although VA's medical records are already electronic, it still has to convert these into the interoperable format appropriate for its repository. DOD, in addition to converting current records from its multiple systems, must also address medical records that are not automated. As pointed out by a recent Army Inspector General's report, some DOD facilities are having problems with hard-copy records.¹⁹ In the same report, inaccurate and incomplete health data were identified as a problem to be addressed. Before the departments can achieve the long-term goal of seamless sharing of medical information, all these tasks and challenges will have to be addressed. Consequently, it is essential for the departments to develop a comprehensive project plan to guide these efforts to completion, as we have previously recommended.

VA and DOD Are Exchanging Limited Health Information through Short-Term Projects

In addition to the long-term effort described above, the two departments have made some progress in meeting immediate needs to share information in their respective legacy systems by setting up short-term projects, as mentioned earlier, which are in various stages of completion. In addition, the departments have set up special processes to transfer data from DOD facilities to VA's polytrauma centers, which treat traumatic brain injuries and other especially severe injuries.

¹⁹ Inspector General, Army, *Army Physical Disability Evaluation System Inspection* (March 2007).

One-Way Transfer Capability Is Operational

DOD has been using FHIE to transfer information to VA since 2002. According to department officials, over 184 million clinical messages on more than 3.8 million veterans have been transferred to the FHIE data repository as of March 2007. Data elements transferred are laboratory results, radiology results, outpatient pharmacy data, allergy information, consultation reports, elements of the standard ambulatory data record, and demographic data. Further, since July 2005, FHIE has been used to transfer pre- and post-deployment health assessment and reassessment data; as of March 2007, VA has access to data for more than 681,000 separated service members and demobilized Reserve and National Guard members who had been deployed. Transfers are done in batches once a month, or weekly for veterans who have been referred to VA treatment facilities.

According to a joint DOD/VA report,²⁰ FHIE has made a significant contribution to the delivery and continuity of care of separated service members as they transition to veteran status, as well as to the adjudication of disability claims.

Laboratory Interface Initiative Allows VA and DOD to Share Lab Resources

One of the departments' demonstration projects, the Laboratory Data Sharing Interface (LDSI), is now fully operational and is deployed when local agencies have a business case for its use and sign an agreement. It requires customization for each locality and is currently deployed at nine locations. LDSI currently supports a variety of chemistry and hematology tests, and work is under way to include microbiology and anatomic pathology.

Once LDSI is implemented at a facility, the only nonautomated action needed for a laboratory test is transporting the specimens. If a test is not performed at a VA or DOD doctor's home facility, the doctor can order the test, the order is transmitted electronically to

²⁰ December 2004 VA and DOD Joint Strategic Plan.

the appropriate lab (the other department's facility or in some cases a local commercial lab), and the results are returned electronically.

Among the benefits of LDSI, according to VA and DOD, are increased speed in receiving laboratory results and decreased errors from manual entry of orders. The LDSI project manager in San Antonio stated that another benefit of the project is the time saved by eliminating the need to rekey orders at processing labs to input the information into the laboratories' systems. Additionally, the San Antonio VA facility no longer has to contract out some of its laboratory work to private companies, but instead uses the DOD laboratory.

Two-Way Interface Allows Real-Time Viewing of Text Information

Developed under a second demonstration project, the BHIE interface is now available throughout VA and partially deployed at DOD. It is currently deployed at 25 DOD sites, providing access to 15 medical centers, 18 hospitals, and over 190 outpatient clinics associated with these sites. DOD plans to make current BHIE capabilities available departmentwide by June 2007.

The interface permits a medical care provider to query patient data from all VA sites and any DOD site where it is installed and to view that data onscreen almost immediately. It not only allows DOD and VA to view each other's information, it also allows DOD sites to see previously inaccessible data at other DOD sites.

As initially developed, the BHIE interface provides access to information in VA's VistA and DOD's CHCS, but it is currently being expanded to query data in other DOD databases (in addition to CHCS). In particular, DOD has developed an interface to the Clinical Information System (CIS), an inpatient system used by many DOD facilities, which will provide bidirectional views of discharge summaries. The BHIE-CIS interface is currently deployed at five DOD sites and planned for eight others. Further, interfaces to two additional systems are planned for June and July 2007: An interface to DOD's modernized data repository, CDR, will give access to outpatient data from combat theaters. An interface to another DOD

database, the Theater Medical Data Store, will give access to inpatient information from combat theaters.

The departments also plan to make more data elements available. Currently, BHIE enables text-only viewing of patient identification, outpatient pharmacy, microbiology, cytology, radiology, laboratory orders, and allergy data from its interface with DOD's CHCS. Where it interfaces with CIS, it also allows viewing of discharge summaries from VA and the five DOD sites. DOD staff told us that in early fiscal year 2008, they plan to add provider notes, procedures, and problem lists. Later in fiscal year 2008, they plan to add vital signs, scanned images and documents, family history, social history, and other history questionnaires. In addition, at the VA/DOD site in El Paso, a trial is under way of a process for exchanging radiological images using the BHIE/FHIE infrastructure.²¹ Some images have successfully been exchanged.

Through their efforts on these long- and near-term initiatives, VA and DOD are achieving exchanges of various types of health information (see attachment 1 for a summary of all the types of data currently being shared and those planned for the future, as well as cost data on the initiatives). However, these exchanges are as yet limited, and significant work remains to be done to expand the data shared and integrate the various initiatives.

Special Procedures Provide Information to VA Polytrauma Centers

In addition to the information technology initiatives described, DOD and VA have set up special activities to transfer medical information to VA's four polytrauma centers, which are treating active-duty service members severely wounded in combat.²² Polytrauma centers care for veterans and returning service members with injuries to more than one physical region or organ system, one of which may be life threatening, and which results in physical, cognitive,

²¹ To create BHIE, the departments drew on the architecture and framework of the information transfer system established by the FHIE project.

²² In particular, clinicians required access to discharge notices, which describe the treatment given at previous medical facilities and the status of patients when they left those facilities.

psychological, or psychosocial impairments and functional disability. Some examples of polytrauma include traumatic brain injury (TBI), amputations, and loss of hearing or vision.

When service members are seriously injured in a combat theater overseas, they are first treated locally. They are then generally evacuated to Landstuhl Medical Center in Germany, after which they are transferred to a military treatment facility in the United States, usually Walter Reed Army Medical Center in Washington, D.C.; the National Naval Medical Center in Bethesda, Maryland; or Brooke Army Medical Center, at Fort Sam Houston, Texas. From these facilities, service members suffering from polytrauma may be transferred to one of VA's four polytrauma centers for treatment.²³

At each of these locations, the injured service members will accumulate medical records, in addition to medical records already in existence before they were injured. However, the DOD medical information is currently collected in many different systems and is not easily accessible to VA polytrauma centers. Specifically:

1. In the combat theater, electronic medical information may be collected for a variety of reasons, including routine outpatient care, as well as serious injuries. These data are stored in the Theater Medical Data Store, which can be accessed by unit commanders and others. (As mentioned earlier, the departments have plans to develop a BHIE interface to this system by July 2007. Until then, VA cannot access these data.) In addition, both inpatient and outpatient medical data for patients who are evacuated are entered into the Joint Patient Tracking Application. (A few VA polytrauma center staff have been given access to this application.)
2. At Landstuhl, inpatient medical records are paper-based (except for discharge summaries). The paper records are sent with a patient as the individual is transferred for treatment in the United States.

²³ The four Polytrauma Rehabilitation Centers are in Richmond, Tampa, Minneapolis, and Palo Alto.

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3. At the DOD treatment facility (Walter Reed, Bethesda, or Brooke), additional information will be recorded in CIS and CHCS/CDR.²⁴

When service members are transferred to a VA polytrauma center, VA and DOD have several ad hoc processes in place to electronically transfer the patients' medical information:

- DOD has set up secure links to enable a limited number of clinicians at the polytrauma centers to log directly into CIS at Walter Reed and Bethesda Naval Hospital to access patient data.
- Staff at Walter Reed collect paper records, print records from CIS, scan all these, and transmit the scanned data to three of the four polytrauma centers. DOD staff said that they are working on establishing this capability at the Brooke and Bethesda medical centers, as well as the fourth VA polytrauma center. According to VA staff, although the initiative began several months ago, it has only recently begun running smoothly as the contractor became more skilled at assembling the records. DOD staff also pointed out that this laborious process is feasible only because the number of polytrauma patients is small (about 350 in all to date); it would not be practical on a large scale.
- Staff at Walter Reed and Bethesda are transmitting radiology images electronically to three polytrauma centers. (A fourth has this capability, but at this time no radiology images have been transferred there.) Access to radiology images is a high priority for polytrauma center doctors, but like scanning paper records, transmitting these images requires manual intervention: when each image is received at VA, it must be individually uploaded to VistA's imagery viewing capability. This process would not be practical for large volumes of images.
- VA has access to outpatient data (via BHIE) from 25 DOD sites, including Landstuhl.

Although these various efforts to transfer medical information on seriously wounded patients are working, and the departments are to be commended on their efforts, the multiple processes and

²⁴ Pharmacy and drug information would be stored in CDR; other health information continues to be stored in local CHCS databases.

laborious manual tasks illustrate the effects of the lack of integrated health information systems and the difficulties of exchanging information in their absence.

In conclusion, through the long- and short-term initiatives described, as well as efforts such as those at the polytrauma centers, VA and DOD are achieving exchanges of health information. However, these exchanges are as yet limited, and significant work remains to be done to fully achieve the goal of exchanging interoperable, computable data, including agreeing to standards for the remaining categories of medical information, populating the data repositories with all this information, completing the development of Health@Vet VistA and AHLTA, and transitioning from the legacy systems. To complete these tasks, a detailed project management plan continue to be of vital importance to the ultimate success of the effort to develop a lifelong virtual medical record. We have previously recommended that the departments develop a clearly defined project management plan that describes the technical and managerial processes necessary to satisfy project requirements, including a work breakdown structure and schedule for all development, testing, and implementation tasks. Without a plan of sufficient detail, VA and DOD increase the risk that the long-time project will not deliver the planned capabilities in the time and at the cost expected. Further, it is not clear how all the initiatives we have described today are to be incorporated into an overall strategy toward achieving the departments' goal of comprehensive, seamless exchange of health information.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the subcommittee may have.

Contacts and Acknowledgments

If you have any questions concerning this testimony, please contact Valerie C. Melvin, Director, Human Capital and Management Information Systems Issues, at (202) 512-6304 or melvinv@gao.gov.

Other individuals who made key contributions to this testimony include Barbara Oliver, Assistant Director; Barbara Collier; and Glenn Spiegel.

Attachment 1: Supplementary Tables

Types of Data Shared by DOD and VA Are Growing but Remain Limited

Table 3 summarizes the types of health data currently shared through the long- and near-term initiatives we have described, as well as types of data that are currently planned for addition. While this gives some indication of the scale of the tasks involved in sharing medical information, it does not depict the full extent of information that is currently being captured in health information systems and that remains to be addressed.

Table 3: Data Elements Made Available and Planned by DOD-VA Initiatives

Initiative	Data elements		Comments
	Available	Planned	
CHDR	Outpatient pharmacy Drug allergy	Laboratory data	Computable data are exchanged between one department's data repository and the other's.
FHIE	Patient demographics Laboratory results Radiology reports Outpatient pharmacy information Admission discharge transfer data Discharge summaries Consult reports Allergies Data from the DoD Standard Ambulatory Data Record Pre- and post-deployment assessments	None	One-way batch transfer of text data from DOD to VA occurs weekly if discharged patient has been referred to VA for treatment; otherwise monthly.
LDSI	Laboratory orders Laboratory results (chemistry and hematology only)	Microbiology Anatomic pathology	Noncomputable text data are transferred.
BHIE	Outpatient pharmacy data Drug & food allergy information Surgical pathology reports Microbiology results Cytology reports Chemistry & hematology reports Laboratory orders Radiology text reports Inpatient discharge summaries and/or emergency room notes from CIS at five DOD and all VA sites	Provider notes Procedures Problem lists Vital signs Scanned images and documents Family history Social history Other history questionnaires Radiology images	Data are not transferred but can be viewed.

Source: GAO analysis of VA and DOD data.

Reported Costs

Table 4 shows costs expended on these information sharing initiatives since their inception.

Table 4: Costs of DOD and VA Initiatives Since Inception

Project	VA expenditure	DOD expenditure
HealtheVet VistA	\$514 million through FY 2005	—
AHLTA	—	\$755 million through FY 2006 (estimated)
<i>Joint initiatives:</i>		
CHDR	5.3 million	DOD does not account for these projects separately.
FHIE	62.4 million	
LDSI	1.5 million	
BHIE	7.0 million	
Total	\$76.2 million	\$72.6 million through FY 2006

Source: GAO analysis of DOD and VA data.

Related GAO Products

Computer-Based Patient Records: Better Planning and Oversight by VA, DOD, and IHS Would Enhance Health Data Sharing. [GAO-01-459](#). Washington, D.C.: April 30, 2001.

Veterans Affairs: Sustained Management Attention Is Key to Achieving Information Technology Results. [GAO-02-703](#). Washington, D.C.: June 12, 2002.

Computer-Based Patient Records: Short-Term Progress Made, but Much Work Remains to Achieve a Two-Way Data Exchange Between VA and DOD Health Systems. [GAO-04-271T](#). Washington, D.C.: November 19, 2003.

Computer-Based Patient Records: Sound Planning and Project Management Are Needed to Achieve a Two-Way Exchange of VA and DOD Health Data. [GAO-04-402T](#). Washington, D.C.: March 17, 2004.

Computer-Based Patient Records: VA and DOD Efforts to Exchange Health Data Could Benefit from Improved Planning and Project Management. [GAO-04-687](#). Washington, D.C.: June 7, 2004.

Computer-Based Patient Records: VA and DOD Made Progress, but Much Work Remains to Fully Share Medical Information. [GAO-05-1051T](#). Washington, D.C.: September 28, 2005.

Information Technology: VA and DOD Face Challenges in Completing Key Efforts. [GAO-06-905T](#). Washington, D.C.: June 22, 2006.

DOD and VA Exchange of Computable Pharmacy Data. [GAO-07-554R](#). Washington, D.C.: April 30, 2007.

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